

inches each side of the airplane centerline, and the replacement of angle cap strips and plates as described in paragraph 3-25. The ends of the inserted channel must be butted against and lined up with the existing beam channel. The inserted channel must be spliced to the existing structure similar to Figure 3-3. The fittings, plates and angles on the beam web must be installed on the inserted channel identical to the original structure. Damage to any other portion of the stabilizer beam, which exceeds approximately eight inches and requires a splice, should be repaired by an insertion. The insertion member must be spliced to the existing structure using the repair requirements for the portion of the beam being repaired.

### 3-28. HORIZONTAL STABILIZER RIBS.

3-29. DESCRIPTION. (See Figure 3-1.) The ribs are fabricated of 24ST alclad sheet. All ribs have stiffening beads, flanged lightening holes, upper and lower skin attachment flanges and bent vertical flanges on the aft end, which are riveted to the horizontal stabilizer beam web.

3-30. NEGLIGIBLE DAMAGE. Smooth dents free of cracks and abrasions and clear of lightening hole flanges or bends may be disregarded, provided the dents do not exceed a depth of 1/8 inch and 1 1/2 inches in diameter and adjacent dents are at a distance of 15 inches. Dents exceeding the above limits, and bent flanges, subsequently bumped back to contour without cracking or creasing the rib may be classified negligible damage. Scratches which do not penetrate beyond the alclad coating may be considered negligible damage.

3-31. DAMAGE REPAIRABLE BY PATCHING. Damage to ribs which may vary in extent and location must be repaired in accordance with the repair data shown on Figures B-5 and B-6.

3-32. DAMAGE REPAIRABLE BY INSERTION. Damage to the rib which exceeds 1/3 the length of the rib should be repaired by an insertion repair. The insertion repair should be the same gage, section and material as the existing structure or an equivalent section. Damage to the forward or aft portion of the rib which exceeds 1/3 the length of the rib must be repaired by an extension splice with the same requirements as for the insertion repair. The insertion or extension member must be attached to the structure with the same rivet pattern as the original member.

### 3-33. ELEVATOR.

3-34. DESCRIPTION. (See Figure 3-1.) The elevators are interchangeable. Each is built around a frame consisting of two spars and three ribs. Between the spars there are angle stiffeners riveted inside the upper and lower surface skin and located approximately every eight inches from the root to tip. Short nose ribs are located forward of the front spar at each hinge bracket. A formed tip is attached to the outermost rib by 12 speed nuts. Adjustable metal trim tabs are installed between the inboard and center ribs. A torque tube riveted to each elevator is connected to an actuating horn at the airplane centerline. All the elevator parts are formed of 24ST alclad sheet, except the tip which is made from 350 aluminum alloy, and the torque tube which is steel.

3-35. ACCESS FOR REPAIRS. Access to the interior of each elevator assembly may be gained by removing the skin or by installing a removable access cover plate as described in paragraphs 3-12 and 3-13.

### 3-36. ELEVATOR SKIN.

3-37. DESCRIPTION. All skin is .016 gage riveted to beams, ribs, and stiffeners by AD3 modified brazier head rivets. A single bent up sheet forms the trailing edge, upper and lower surface, and split leading edge.

3-38. NEGLIGIBLE DAMAGE. Smooth shallow dents located anywhere on the elevator skin and free of cracks and abrasions may be disregarded, provided these dents do not exceed a depth of 1/8 inch and a diameter of 1 1/2 inches, and adjacent dents are at a distance of 15 inches. Dents exceeding the above limits and subsequently bumped back to contour without cracking or creasing the skin may be classified as negligible damage. Scratches which do not penetrate beyond the alclad coating are considered negligible damage.

3-39. DAMAGE REPAIRABLE BY PATCHING. Damage of the elevator skin panels which exceeds the limits of negligible damage should be repaired according to Figures B-1 and B-3.

3-40. DAMAGE REPAIRABLE BY INSERTION. Skin that is damaged extensively should be repaired by splicing in a new skin from one structural member to the next. The repair should be made to lie along stiffening members, ribs or beams, and each seam should be made exactly the same in regard to rivet size, spacing and rivet pattern as the parallel manufactured seams at the edges of the original sheet. If the manufactured seams are different, the stronger one must be copied. A similar repair is shown in Figure 2-3.

### 3-41. ELEVATOR MAIN BEAM.

3-42. DESCRIPTION. The main beam is a channel formed of .032 24ST alclad, the web is beaded for stiffness.

3-43. NEGLIGIBLE DAMAGE. Web damage not exceeding the following limits requires no repair or reinforcement. Smooth dents free of cracks and abrasions and clear of lightening hole flanges and bends may be disregarded, provided the dents do not exceed a depth of 1/8 inch and 1 1/2 inches in diameter and adjacent dents are at a distance of 15 inches. Web dents exceeding the above limits and subsequently bumped back to contour without cracking, creasing or oil canning the web may be classified as negligible damage. Bent or dented beam flanges free of cracks and abrasions which are reworked to their original shape, free of waviness, and without cracking or creasing may be considered negligible damage. Scratches, located anywhere on the beam, which do not penetrate beyond the alclad coating may be considered negligible damage.

### 3-44. DAMAGE REPAIRABLE BY PATCHING.

3-45. DAMAGED FLANGE AND ADJACENT WEB. The skin attachment flange and approximately 5/8 inch of the adjacent web are considered the effective flange portion of the beam. Damage to any portion of either the upper or lower effective flange which exceeds the specified limits of negligible damage may be repaired similar to Figure 4-3. One angle may be used to repair damage. Nest the angle inside the damaged flange and adjacent web. Four AN470AD5 rivets are required thru the flange each side of the damaged area. Space the web rivet rows approximately one inch apart, with one row outside the damaged area. Three AN470AD5 rivets are required per web row, each side of the damaged area.